



# Proposal to develop alternative future urban and agricultural land use footprints for Water Plan Update 2013



# Activities for Today

- 💧 Summary of how the Water Plan used land use information in Update 2009 to estimate future water demand
- 💧 Application of UPlan model to estimate future urban footprints
- 💧 Proposal to develop alternative future urban and agricultural footprints in Water Plan Update 2013
- 💧 Discussion: Questions we have for you and you have for Water Plan



# California Water Plan

*State's Blueprint for  
Integrated Water Management & Sustainability*







FLOODS



DECLINING ECOSYSTEMS

# Managing an Uncertain Future

Risk, Uncertainty, and Sustainability



DROUGHT



ENERGY  
CRISIS

# Update 2009 Scenarios

## Factors of Uncertainty

### Current Trends

Recent trends are assumed to continue into the future. Regulations are not coordinated or comprehensive, creating uncertainty for planners and managers. The state continues to face lawsuits, from flood damages to water quality and endangered species protections.

### Slow & Strategic Growth

Private, public, and governmental institutions form alliances to provide for efficient planning and development that is less resources intensive than current conditions. State government implements comprehensive and coordinated regulatory programs to improve water quality, protect fish and wildlife, and protect communities from flooding.

### Expansive Growth

Future conditions are more resource intensive than existing conditions. Protection of water quality and endangered species is driven mostly by lawsuits. State government has responded on a case-by-case basis, creating a patchwork of regulations and uncertainty for planners and water managers.

Population



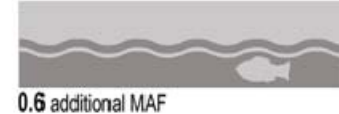
Land Use



Irrigated Crop Area



Environmental Water

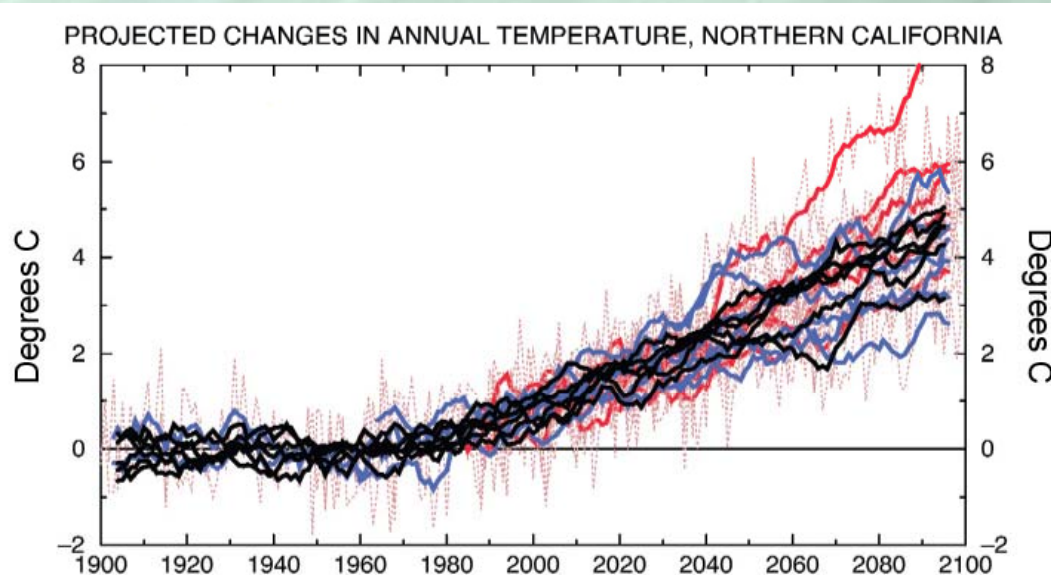
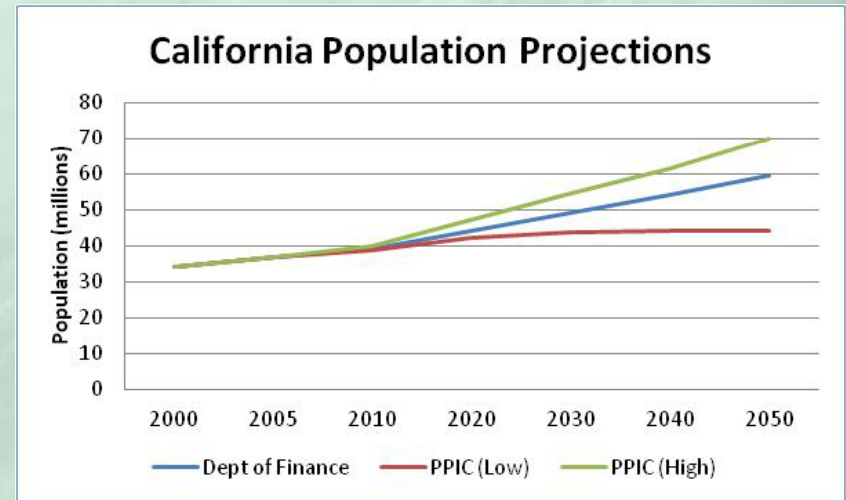
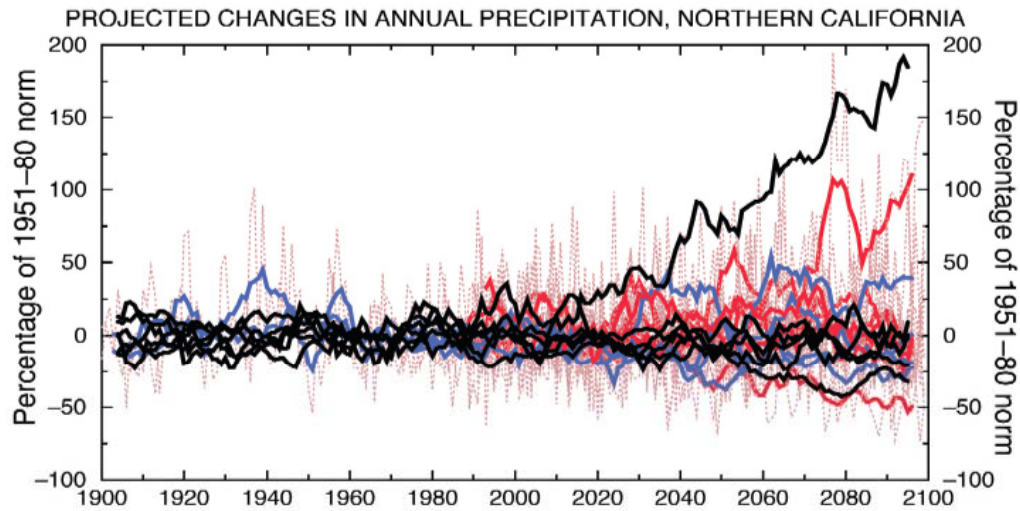


Background Water Conservation

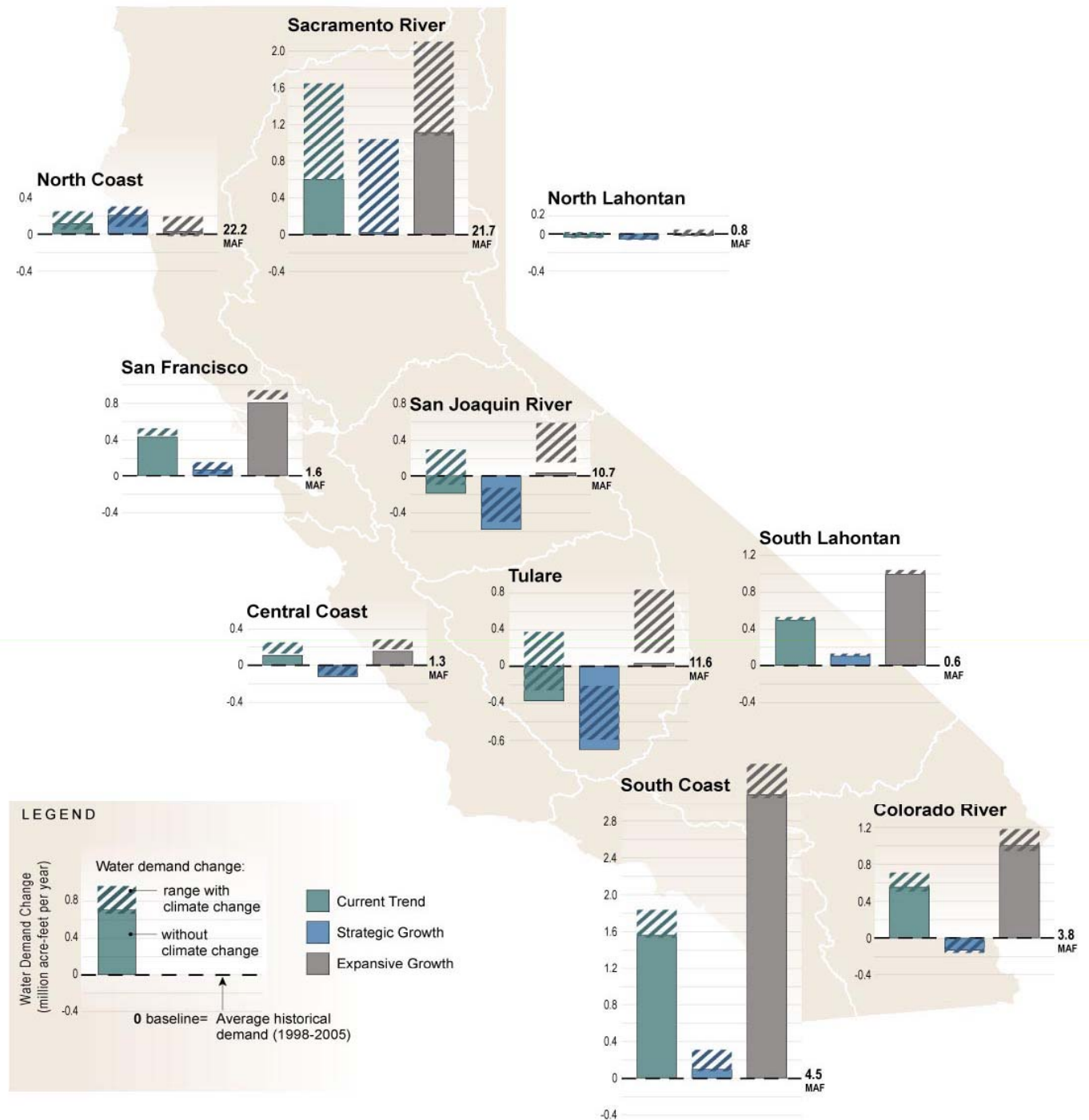




# Developing Future Scenarios



# Update 2009 Regional Water Demand Changes By Scenario



# Resource Management Strategies (Update 2009)

## A Range of Choices

### Reduce Water Demand

- ◆ Agricultural Water Use Efficiency
- ◆ Urban Water Use Efficiency

### Improve Operational Efficiency & Transfers

- ◆ Conveyance – Delta
- ◆ Conveyance – Regional / Local
- ◆ System Reoperation
- ◆ Water Transfers

### Increase Water Supply

- ◆ Conjunctive Management & Groundwater Storage
- ◆ Desalination –Brackish & Seawater
- ◆ Precipitation Enhancement
- ◆ Recycled Municipal Water
- ◆ Surface Storage – CALFED
- ◆ Surface Storage – Regional / Local

### Improve Flood Management

- ◆ Flood Risk Management

### Improve Water Quality

- ◆ Drinking Water Treatment & Distribution
- ◆ Groundwater / Aquifer Remediation
- ◆ Matching Quality to Use
- ◆ Pollution Prevention
- ◆ Salt & Salinity Management
- ◆ Urban Runoff Management

### Practice Resource Stewardship

- ◆ Agricultural Lands Stewardship
- ◆ Economic Incentives  
(Loans, Grants & Water Pricing)
- ◆ Ecosystem Restoration
- ◆ Forest Management
- ◆ Land Use Planning & Management
- ◆ Recharge Areas Protection
- ◆ Water-Dependent Recreation
- ◆ Watershed Management

Other-- Crop idling, dew vaporization, fog collection, irrigated land retirement, rainfed agriculture, waterbag transport





# Stakeholder Outreach

## Planning for an Uncertain Future

- 💧 SWAN Workshop – August 2010
  - Received advice on desired technical enhancements
- 💧 Advisory Committee – March 2011
- 💧 SWAN Workshop – May 2011
  - Shared results of Proof of Concept
- 💧 Focus group – June 2011
  - 2 meetings with a cross section of people that worked off-line to provide feedback
- 💧 Advisory Committee – June 2011
- 💧 Policy Workshop – August 2011



# Stakeholder feedback

- 💧 Evaluate how factors like climate, future dedication of water to the environment, **land use decisions** and population interact to affect future water use
- 💧 Evaluate how resource management strategies perform under alternative plausible futures
  - Quantify costs, benefits, tradeoffs, and vulnerabilities



# Next Steps

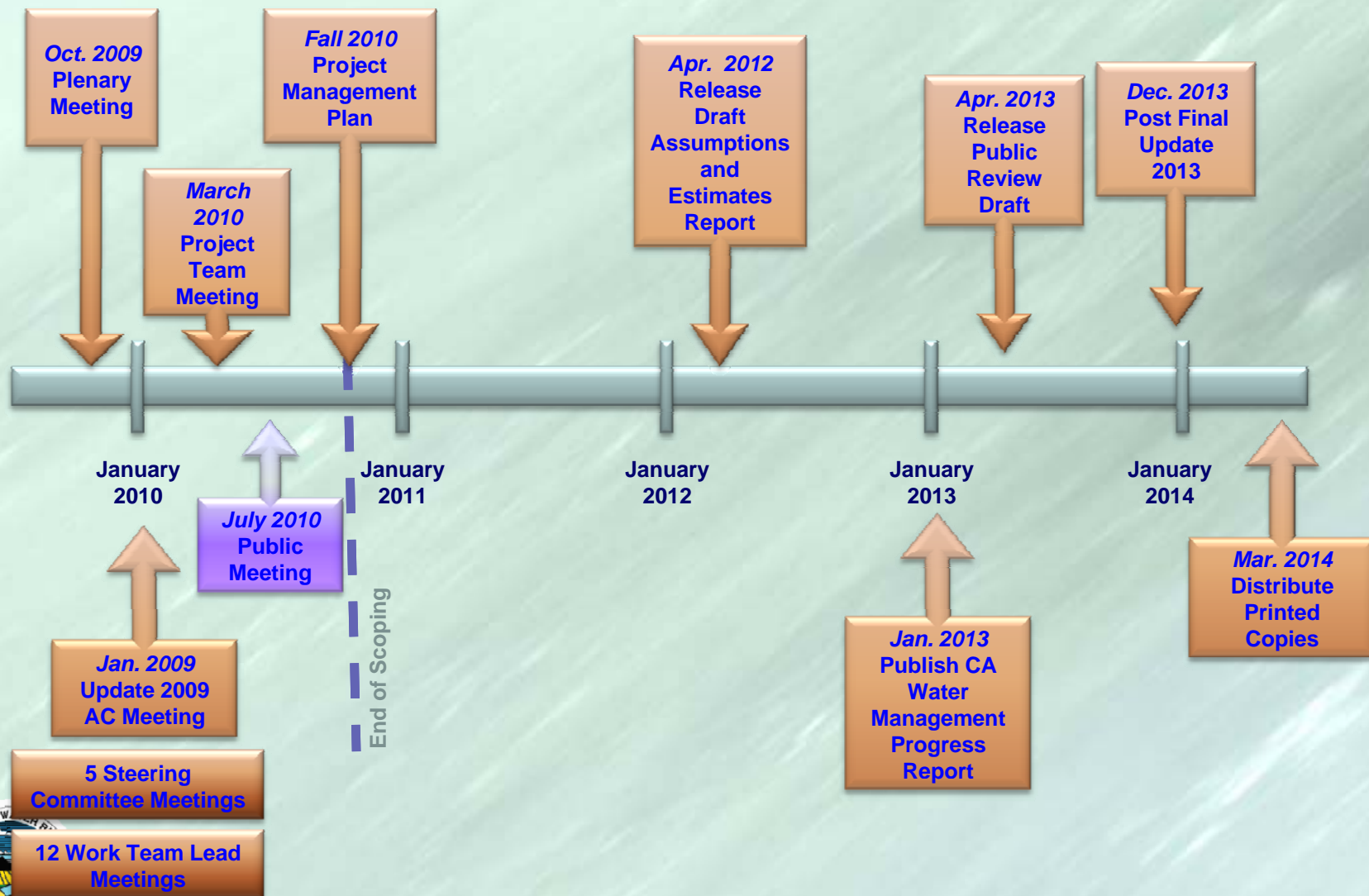
- 💧 Winter 2012 – Regional outreach: planning for an uncertain future (scenarios)
- 💧 Spring 2012 – Assumptions & Estimates
- 💧 Summer 2012 – Quantify alternative urban and agricultural land use footprints
- 💧 Fall 2012 / Winter 2013 – Quantify relationships between alternative land use strategies and performance of resource management strategies





# Water Plan Update 2013

## *Timeline and Major Deliverables*



# Contact Information

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💧 SWAN

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